

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



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In re Application of

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Serial No.: 07/957,080

Group Art Unit: 1105

Filed: October 7, 1992

Examiner: Ogden

For: LUBRICANTS

March 27, 1995

**REPLY BRIEF WITH AMENDMENT RESPONSIVE
TO EXAMINER'S NEW REJECTIONS**

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

Sir:

Attached is an amendment for entry herein as a follow-up to the Examiner's new rejections in the Answer dated January 27, 1995.

The amendment corrects claim 1 in a way which should obviate the Examiner's new Section 112 rejection (pages 3-4 of Examiner's Answer).

With regard to the remaining issues, it is noted that the Examiner has withdrawn his prior Section 103 rejections based on WO 9012849 (WO '849) alone or with EP 485,979 (page 3 of the Answer). However, the Examiner has made two new rejections based on the combination of (1) WO '849 (Jolley) with Shankland et al / or (2) WO '849 (Jolley) in combination with Yoshida et al or Shiflett. All claims are rejected on reference combination (2)

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while only claims 1, 14-18, 20-24, 27 and 28 are rejected under (1), i.e. claims 5 and 8 are not rejected on the basis of WO '849 (Jolley) with Shankland et al.

The applicant respectfully submits that the Examiner's new reference combinations are not warranted. There is, in brief, no reason (apart from hindsight on the basis of the applicant's disclosure) for the Examiner's selective combination of disclosure from the secondary references with WO '849 (Jolley) to reject the applicant's claims. There is no motivation in any of the references to make the combination required to reach the applicant's invention. Manifestly such motivation has to exist in the art to justify rejection under 35 USC 103.

As the applicant's main brief and claims bring out, the applicant's invention is concerned with a working fluid composition comprising a refrigerant component which is a mixture of two or more hydrofluorocarbons selected from difluoromethane (R-32), 1,1,1,2-tetrafluoroethane (R-134a) and pentafluoroethane (R-125) and a lubricant component comprising one or more ester compounds of specified formula.

Important to the invention is the requirement that the lubricant is at least partially soluble in each component of the heat transfer fluid and, as amended herewith, in the fluid itself. There is nothing in the art to suggest that the applicant's lubricant compound (II) would be at least partially soluble in R-32, R-134a, R-125 or a mixture of R-32/R-134a, R-134a/R-125, R-32/R-125 or R-134a/R-32/R-125.

The deficiencies of WO '849 (Jolley) are detailed in the applicant's main brief. Thus, WO '849 describes the use of ester based lubricants with refrigerants containing one or more C1 to C2 fluorine-containing hydrocarbons. A number of fluorine-containing hydrocarbons are mentioned for use as the refrigerant (pages 8-10) including R-134a. However, there is no mention in WO '849 of either R-32 or R-125. Furthermore, while the WO disclosure mentions the possibility of a refrigerant which might contain a mixture of fluorine-containing hydrocarbons, the only exemplification involves the combination of a single tetrafluoroethane refrigerant with the described ester lubricant. Thus, there is no reason why the skilled man reading WO '849 would expect ester lubricants of the type therein described to work effectively with a refrigerant comprising a mixture of fluorine-containing hydrocarbons as the applicant specifies.

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Moreover, since WO '849 does not even mention R-32 and R-125 as possible candidates for the refrigerant, it is clearly not correct to assume that the skilled man reading WO '849, with or without the secondary references, would expect ester lubricants of the type which the applicant requires to work effectively with a refrigerant comprising the applicant's specific mixture of hydrofluorocarbons.

As far as the Examiner's secondary references are concerned, Shankland discloses azeotrope-like F-32/F-125 mixtures for heating or refrigerating purposes. There is no suggestion to use such mixture with any lubricating agent and there is certainly no indication that the applicant's lubricant would be usefully employed with the Shankland azeotropes or that such lubricant would even be at least partially soluble in F-32, F-125 and mixtures thereof, with the resultant advantages found by the applicant. Essentially the same deficiencies exist in Shiflett and Yoshida as in Shankland with the added comment that Shiflett and Yoshida were filed after WO '849 (Jolley) was published so that if the applicant's invention was obvious from the combination, it would seem reasonable to expect that Shiflett and/or Yoshida would have mentioned the possibility of using their fluorocarbon mixtures with the lubricants of WO '849. They

did not do so. In fact, Yoshida makes no reference at all to the use of a lubricant and Shiflett only makes a very generalized reference to the possibility of using lubricants (column 5, line 3). Clearly, there is no motivation in the secondary references or in WO '849 to combine applicant's specific hydrofluoroalkane mixture with a lubricant as defined in claim 1.

To reiterate, WO '849 (Jolley) describes the use of ester based lubricants with refrigerants containing one or more C1 to C2 fluorine containing hydrocarbons. Suitable fluorine containing hydrocarbons for the refrigerant are discussed on pages 8 to 10 of the specification, but no mention is made of either difluoromethane (R-32) or pentafluoroethane (R-125). Hence, there is no indication in WO '849 that the ester based lubricants disclosed therein are suitable for either the R-32 or R-125 refrigerant compounds, at least one of which must be present in the presently claimed working fluid compositions. Furthermore, since WO '849 only actually exemplifies the combination of the described ester lubricant with a tetrafluoroethane refrigerant, it is evident that the teaching in WO '849 is in no way sufficient to lead the skilled man to believe that the lubricants disclosed therein may be usefully employed with any fluorine containing hydrocarbon. The mere

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reference to other hydrofluorocarbons and hydrochlorofluorocarbons in WO '849 does not, in the absence of some supporting experimental work, amount to a teaching that the described lubricants have general utility allowing them to perform satisfactorily with all such refrigerant compounds. Certainly, the fact that a given ester lubricant possesses good properties with a tetrafluoroethane refrigerant does not necessarily mean or even reasonably suggest, that the same lubricant will also possess good properties with R-32 or R-125 or with a refrigerant blend in which one of these compounds is a component.

As for the secondary references, the mere fact that refrigerant blends of the type contained in the presently claimed working fluid compositions are known in the art does not in any way make it obvious to use such mixtures in the WO '849 invention. Clearly, the WO '849 disclosure would not lead the skilled man to try the ester lubricants disclosed therein with R-32 and/or R-125 containing refrigerant blends. This is manifest, since WO '849 does not even mention R-32 or R-125 as suitable fluorine containing hydrocarbons.

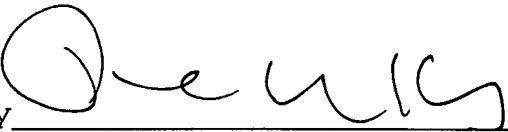
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For all the reasons given above and in the applicant's main brief, it is urged that the claims herein define subject matter which is unobvious from the references and patentable thereover.

Withdrawal or reversal of the Section 103 rejections is requested.

Respectfully submitted,

CUSHMAN, DARBY & CUSHMAN

By 
Paul N. Kokulis
Reg. No. 16773

PNK:lal
1100 New York Avenue, N.W.
Ninth Floor
Washington, D.C. 20005-3918
Phone: (202) 861-3503